

U.S.S.N. 09/121,152

Filed: July 22, 1998

AMENDMENT AND RESPONSE TO OFFICE ACTION

In the Claims

Claims 1-20 (previously cancelled).

21. (Previously presented) A method of de-inking waste printed paper, comprising

a) pulping at a pH between 3 and 8 waste printed paper with an enzyme capable of dislodging ink particles from the waste printed paper in an aqueous medium at a pH between 3 and 8, wherein ink is dislodged from the waste printed paper by action of the enzyme; and

b) removing the dislodged ink particles from the resulting pulp containing medium.

22. (Original) The method of Claim 21 wherein dislodged ink particles are removed by flotation.

23. (Original) The method of Claim 21 wherein dislodged ink particles are removed by washing.

24. (Previously presented) The method of Claim 21 wherein the amount of enzyme used is in the range of 0.005 to 5 percent-by-weight based on the dry weight of the wastepaper.

25. (Currently amended) The method of Claim ~~1~~ 21, wherein said enzyme is selected from the class consisting of cellulases, pectinases, and mixtures thereof.

26. (Previously presented) The method of Claim 21 wherein said enzyme is selected from the group consisting of cellulases derived from *Trichoderma viride*, *Aspergillus niger*, hemicellulases, other carbohydrases and mixtures thereof.

27. (Previously presented) The method of Claim 21 wherein alkali is not added to the aqueous medium.

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28. (Currently Amended) The method of Claim 21 wherein the pulping occurs at a ~~consistency of wastepaper pulping pulp~~ consistency of about 12% or greater.

29. (cancelled)

30. (Currently amended) The method of Claim ~~1~~ 21 wherein the temperature of the pulping is in a range of from room temperature up to about 60C.

31. (Previously presented) A method of recycling waste printed paper, comprising:

a) pulping waste printed paper;

b) contacting at a pH between 3 and 8 waste printed paper at high wastepaper pulping consistency with an enzyme capable of dislodging ink particles from the waste printed paper in an aqueous medium at a pH between 3 and 8, wherein ink is dislodged from the waste printed paper by action of the enzyme; and

c) removing dislodged ink particles from the resulting pulp containing medium.

32. (Previously presented) The method of Claim 31, wherein the enzyme is a cellulase selected from the group of cellulases derived from *Trichoderma viride*, *Aspergillus niger* or mixtures thereof wherein the cellulase is used in an amount between 0.005 and 5.0 percent-by-weight based on the dry weight of the waste printed paper, the contacting being carried out at a temperature between room temperature and about 60°C.

33. (Previously presented) The method of Claim 31 wherein the amount of enzyme used is in the range of 0.005 to 5 percent-by-weight based on the dry weight of the wastepaper.

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34. (Previously presented) The method of Claim 31 wherein said enzyme is selected from the class consisting of cellulase, pectinase, and mixtures thereof.

35. (Previously presented) The method of Claim 31 wherein said enzyme is a cellulase selected from the group consisting of cellulases derived from *Trichoderma viride*, *Aspergillus niger*, hemicellulases, other carbohydrases and mixtures thereof.

36. (Currently amended) The method of Claim 31 wherein the ~~in~~ ink particles are removed by flotation or washing.

37. (Previously presented) The method of Claim 31 wherein alkali is not added to the aqueous medium.

38. (Currently amended) The method of Claim 31 wherein the pulping occurs at a consistency of wastepaper pulp consistency of between 12% and 15% ~~concentration~~.

39. (cancelled)

40. (Previously presented) The method of Claim 31 wherein the temperature of the pulping is in a range of from room temperature up to about 60C.

41. (Canceled)

42. (Previously presented) The method of claim 31 wherein the enzyme enhances removal of materials selected from the group consisting of heavily coated inks, highly polymerized inks, non-impact inks, and cured polymer resins.

43. (Previously presented) The method of claim 42 wherein the enzyme is effective to enhance removal of cured polymer resins.

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44. (Previously presented) The method of claim 31 wherein the enzyme is effective to debond fiber bonding.

45. (Previously presented) The method of claim 25 wherein the enzyme degrades by enzymatic hydrolysis.

46. (Previously presented) The method of claim 31 wherein the enzyme degrades by enzymatic hydrolysis.

47. (Previously presented) The method of claim 41 wherein the enzyme degrades by enzymatic hydrolysis.

48. (currently amended) The method of claim 21 wherein the enzyme is ~~not an alkali-resistant~~ an acid resistant cellulase.

49. (Currently amended) The method of claim 21 wherein the wastepaper ~~pulping consistency is at a common wastepaper pulping consistency~~ disintegrated in a conventional pulper.

50. (Currently amended) The method of claim 49 wherein the ~~common-wastepaper pulping~~ consistency of the pulp in the conventional pulper is between 4 and 7% ~~concentration~~.